ABSTRACTS

Gregory L. Moneta, MD, Abstracts Section Editor

Prospective evaluation of carotid bruit as a predictor of first stroke in type II diabetes: The Fremantle Study

Gillett M, Davis WA, Paxon D, et al. Stroke 2003;34:2145-51.

Conclusion: After detection of a carotid bruit in a patient with type II diabetes the risk for an initial stroke within 2 years is six times that in a patient with type II diabetes without a carotid bruit.

Summary: The Fremantle Diabetes Study is an observational, prospective, community based study of diabetes in western Australia. Between 1993 and 1996, 1081 patients with type II diabetes and no history of cerebrovascular disease were recruited and observed until the end of January 2002. Cox proportional hazards models were used to identify significant cerebrovascular risk factors for stroke and to determine whether carotid bruit was an independent predictor of first stroke in patients with type II diabetes.

After study entry, 134 patients (11.3%) developed a first stroke at a mean of 6.5 ± 2.2 years of follow-up. In the first 2 years after entering the study, a first stroke occurred in 45 patients (3.8%). After adjustment for cardiovascular risk factors and other potentially confounding variables, first stroke in the first 2 years after study entry was strongly predicted by the presence of carotid bruit (hazard ratio, 6.7; 95% confidence interval, 3.0-14.9; $P < .001$). After 2 years of study observation, first stroke was not associated with carotid bruit ($P = .97$). Both diastolic blood pressure and age were also determinants of first stroke in the first 2 years after study entry. Two years after study entry, age, atrial fibrillation or flutter, and microalbuminuria were independent predictors of stroke.

Comment: It might be concluded that patients with type II diabetes and carotid bruit compose a subgroup who will derive benefit from prophylactic carotid endarterectomy. However, the authors did not report the degree of carotid stenosis in their patients, and it is not clear that all strokes involved the extracranial cervical carotid artery. Clearly the data argue for aggressive risk factor management in patients with type II diabetes and a carotid bruit. The data, however, do not enable one to conclude that patients with a carotid bruit and type II diabetes will benefit from prophylactic carotid endarterectomy.

Carotid artery stenosis: Gray-scale and Doppler ultrasound diagnosis. Society of Radiologists in Ultrasound Consensus Conference

Grant EG, Benson CB, Moneta GL, et al. Radiology 2003;229:340-6.

Conclusion: A consensus conference convened by the Society of Radiologists in Ultrasound developed a set of criteria for grading internal carotid artery (ICA) stenosis with Doppler ultrasound scanning. Criteria are based primarily on ICA peak systolic velocity (PSV) and demonstration of presence of plaque on gray-scale and color Doppler scans.

Summary: A multidisciplinary panel was charged to develop a set of reasonable criteria for Doppler diagnosis of ICA stenosis. Criteria proposed were based on review of the literature and presentations at the conference. Recommendations included:

1. Use of gray-scale, color Doppler scanning and spectral Doppler ultrasound scanning for all carotid artery examinations
2. Stratification of ICA stenoses into six categories:
   a. Normal: ICA PSV less than 125 cm/s, with no visible plaque or intimal thickening
   b. Less than 50% stenosis: ICA PSV less than 125 cm/s, with visible plaque or intimal thickening
   c. 50% to 69% stenosis: ICA PSV 125 to 230 cm/s, with visible plaque
   d. ICA stenosis greater than 70% to near occlusion: ICA PSV greater than 230 cm/s, with visible plaque and luminal narrowing on gray-scale and color images
   e. Near occlusion: color Doppler scan showing an extremely narrow lumen
   f. Total occlusion: no detectable lumen on gray-scale ultrasound scans and no flow on color, power, or spectral Doppler scans

ICA–common carotid artery PSV ratio and ICA end-diastolic velocity may also be used when it appears that ICA PSV may not represent the extent of stenosis.

Comment: The conference consisted of panelists from radiology, neurology, vascular surgery, vascular medicine, and interventional radiology, among other specialties. Results represent what the panelists considered to be reasonable criteria for ICA stenosis. It is suggested that these criteria be considered by laboratories with insufficient angiographic material for validation of existing published criteria. The proposed criteria have not been tested, and do not represent the results of any single publication. Laboratories using published criteria validated locally are urged to continue to use them.

Subcutaneous Fondaparinux vs intravenous unfractionated heparin in initial treatment of pulmonary embolism

Matisse Investigators. N Engl J Med 2003;349:1695-1702.

Conclusion: Fondaparinux, given as once daily subcutaneous treatment without monitoring, was as effective and as safe as intravenously administered unfractionated heparin for treatment of hemodynamically stable patients with symptomatic pulmonary embolism.

Summary: Fondaparinux is an antithrombotic synthetic agent with specific anti–factor Xa; activity. It is administered as a single daily subcutaneous injection, and does not require monitoring of the anticoagulation effect. This was an open-label trial of 2213 hemodynamically stable patients with acute symptomatic pulmonary embolism. Pulmonary embolism was diagnosed on the basis of findings of computed tomography, pulmonary angiography, high-probability ventilation perfusion scanning, or a nondiagnostic lung scan with either duplex ultrasound scanning or venographic diagnosis of deep venous thrombosis. Patients received either unfractionated intravenous heparin via continuous infusion, with a target partial thromboplastin time of one and a half to two and a half times control, or daily subcutaneous Fondaparinux at a fixed weight-adjusted dose. Both drugs were given for 5 days until oral anticoagulation therapy resulted in an international normalized ratio greater than 2.0. The primary end point was symptomatic recurrent pulmonary embolism or new or recurrent deep venous thrombosis at 3 months.

New or recurrent pulmonary embolism or deep venous thrombosis occurred in 42 of 1103 patients receiving Fondaparinux (3.8%) and in 56 of 1110 patients receiving unfractionated heparin (5.0%). Major bleeding occurred in 1.1% of those given heparin and in 1.3% of those given Fondaparinux. Mortality at 3 months was 5.2% in the Fondaparinux group, and 4.4% in the heparin group. In the Fondaparinux group 14 patients died of pulmonary embolism within 3 months, compared with 15 patients in the heparin group.

Comment: The study demonstrates therapeutic equivalence of Fondaparinux and continuous infusion of intravenous unfractionated heparin in the initial management of symptomatic pulmonary embolism in hemodynamically stable patients. A single daily subcutaneous dose, combined with no need for monitoring of the anticoagulant effect, makes Fondaparinux an attractive alternative for initial management of uncomplicated pulmonary embolism.

Effective treatment of carotid artery stenosis on blood pressure: A comparison of hemodynamic disturbances after carotid endarterectomy in endovascular treatment

McKebitt FN, Sivaguru A, Venables GS, et al. Stroke 2003;34:2573-82.

Conclusion: Carotid endarterectomy and endovascular treatment of carotid artery stenosis both affect blood pressure stability during the first 24 hours after the procedure. Compared with preoperative baseline levels, systolic blood pressure at 6 months is lower in patients who undergo surgery, and is unchanged in patients who undergo endovascular treatment.

Summary: Periprocedure and long-term blood pressure effects of carotid endarterectomy and endovascular treatment of carotid artery stenosis were studied in patients randomized at a single center in the Carotid and Vertebral Artery Transluminal Angioplasty Study (CAVATAS). Patients were randomized to endovascular treatment of carotid stenosis (n = 55) or carotid endarterectomy (n = 49). Ambulatory 24-hour blood pressure monitoring was recorded before carotid intervention and at 24 hours, 1 month and 6 months after intervention. Hypotension and hypertension were defined as a decrease or increase, respectively, in systolic blood pressure of 30 mm Hg or greater from baseline blood pressure recordings.

After the procedure, in the first 24 hours hypotension occurred in 76% of the endovascular group and 75% of the carotid endarterectomy group, and hypertension occurred in 13% and 11%, respectively. At 1 hour systolic blood pressure decreased by a mean of 24 mm Hg in the surgical group and 16 mm Hg in the endovascular group; however, the decrease was sustained only in the endovascular group ($P < .0001$). At 6 months systolic pressure was at baseline in the endovascular group, and was 5 mm Hg lower in the surgical group. Thirty-day stroke and mortality rate was 10.2% in the surgical group, and 5.5% in the endovascular group. Perioperative neurologic complication was not related to perioperative hemodynamic disturbance.

Comment: The study suggests a difference in blood pressure response after surgical versus endovascular therapy for carotid artery stenosis. In surgical patients, however, a specific protocol was used to reverse hypotension, whereas no specific protocol was used in the stent group. The 6-month data are difficult to interpret, because there is no follow-up information on